# IDAHO DEPARTMENT OF FISH & GAME

Joseph C. Greenley, Director

FEDERAL AID TO FISH AND WILDLIFE RESTORATION

Job Performance Report

Project F-49-R-16



SALMON AND STEELHEAD INVESTIGATIONS

Job No. 1-a. Salmon Spawning Ground Surveys

Period Covered: 1 March 1977 to 28 February 1973

by

Thomas L. Welsh, Regional Fishery Biologist Steven A. Floss, Regional Fishery Biologist Kent W. Ball, Regional Fishery Biologist

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## TABLE OF CONTENTS

<u>Pag</u> e	<u> </u>
ABSTRACT	-
RECOMMENDATIONS	<u>,</u>
OBJECTIVES	<u>)</u>
TECHNIQUES USED	
FINDINGS	
APPENDIX	L]
LIST OF TABLES	
Table 1. Salmon River drainage chinook salmon redd counts, 1977	}
Table 2. Clearwater River drainage chinook salmon redd counts, 1977	ļ
Table 3. Length frequency distribution for spring chinook kelts, 1977	
Table 4. Length frequency distribution for summer chinook kelts, 1977	,
Table 5. Percent age composition, by sex, of spring chinook kelts, 1977	3
Table 6. Percent age composition, by sex, of summer chinook kelts, 1977	)

#### JOB PERFORMANCE REPORT

State of <u>Idaho</u>		Name:	SALMON	AND S	STEELHEA	D IN	WESTIGAT	IONS
Project NoF	-49-R-16	Title:	Salmon	Spawi	ning Gro	und	Surveys	
Job No1	-a							
Period Covered: 1	March 1977 to 28 Fe	ebruary	1978					

#### ABSTRACT

Each year regional fishery biologists survey major chinook salmon spawning areas in their respective regions to count the number of redds constructed in trend count areas and to obtain age and sex composition data. The data are made available for trend analysis, management, and research use.

Redd counts, sex, and age data for 1977 are presented in a series of attached tables and maps.

#### Authors:

Thomas L. Welsh, Regional Fishery Biologist Steven A. Hoss, Regional Fishery Biologist Kent W. Ball, Regional Fishery Biologist

#### RECOMMENDATIONS

The redd count surveys, sex and age composition data collections should be continued to provide management data.

#### OBJECTIVES

To count chinook salmon redds in established trend areas.

To obtain age and sex composition data of the chinook spawning population.

#### TECHNIQUES USED

Redd counts are made from low flying, fixed-wing aircraft, helicopter, or on foot depending on which technique is best suited for a particular stream. Redds are counted when preliminary observations indicate that spawning is over and before redds become obscure from algae and silt.

Carcass surveys ideally are made three times during post-spawning die-off to eliminate bias in sex ratios noted early and late in the season.

Chinook redd counts are included for selected tributaries of the Clearwater River to assist evaluation of reintroduction efforts.

#### FINDINGS

Redd count surveys and sex and age composition data collections were made during the late summer of 1977. These data are summarized in attached tables and maps.

Very few jacks were on the spawning grounds in 1977 which indicates poor survival of progeny from the 1974 brood year. Smolts from the 1974 brood year would have migrated during the spring of 1976 and would be returning in 1978 as 2-year ocean fish. Jacks found in the upper South Fork may be the first returns from hatchery-reared summer chinook smolts planted at Knox Bridge in the spring of 1976. However, the number of jacks observed (13) was not large enough to indicate good survival of the hatchery smolts.

The sex composition of fish recovered on both the spring and summer chinook spawning areas was heavily weighted towards males. The disproportionate number of females may be attributable to the poor contribution of 5-year fish which normally runs 2 to 1 in favor of females.

There appeared to be a late movement of fish onto the Bear Valley and Elk Creek spawning areas. We have always noted a short upstream movement of gravid fish just prior to the onset of spawning, but this late movement was more pronounced in 1977.

Redd counts on some Clearwater River drainage streams may have been elevated due to stocking adults from Kooskia National Fish Hatchery.

Table 1. Salmon River drainage chinook salmon redd counts, 1977.

						5-yr	
Streams	1972	1973	1974	1975	1976	avg.	197
Spring chinook							
Alturas Lake Creek	143	153	42	60	16	83	8!
Upper Salmon River	748	414	338	509	378	477	698
Upper Valley Creek	182	125	127	189	*	156**	1
Upper Yankee Fork	115	104	54	60	40	75	
Upper East Fork	448	665	346	348	75	376	16
Herd Creek	28	47	13	11	27	25	
Marsh Cr. Drainage	312	518	210	201	48	258	9
Lemhi River	507	485	248	366	241	369	47
North Fork Salmon R.	31	55	18	14	6	25	3
Bear Vallev Creek	221	387	130	215	76	206	12
Elk Creek	212	369	108	169	61	184	8
Sulphur Creek	71	78	30	50	14	49	
Upper Big Creek	60	<u>96</u>	28	<u>77</u>	22	<u>57</u>	
Subtotal	3,078	3,496	1,692	2,269	1,004	2,340	1,81
Summer chinook							
Lower Salmon River	412	224	40	45	44	153	9
Lower Valley Creek	39	77	45	80	43	64	6
Lower East Fork	161	138	49	38	39	85	13
Loon Creek	150	78	47	32	31	68	6
South Fork Salmon R.	577	586	218	238	241	372	22
Johnson Creek	220	271	107	69	68	147	8
Secesh RLake Cr.	87	62	21	<u>10</u>	<u>17</u>	<u>39</u>	2
Subtotal	1,646	1,436	527	512	483	921	68
Unclassified Spawners							
Camas Creek	211	358	172	128	61	186	8
Lower Yankee Fork	78	71	28	35	3	43	1
West Fork Yankee Fork	117	86	20	55	11	58	3
Middle Fork Salmon R.	33	<u>18</u>	23	<u>10</u>	<u>6</u>	<u>18</u>	
Subtotal	439	<u>533</u>	243	228	<u>81</u>	<u>305</u>	<u>13</u>
Total	5,163	5,465	2,462	3,009	1,568	3,533	2,63

<sup>\*</sup> Beaver dam washout prohibited redd counts.

<sup>\*\*</sup> Four-year average, 1972-1975.

Table 2. Clearwater River drainage chinook salmon redd counts, 1977.

			Number o	f redds	counted		
						5-yr	
Streams	1972	1973	1974	1975	1976	avg	1977
<u>Selway Drainage</u>							
Selway River	175	261	66	21	58	116	97
Bear Creek	25	26	10	5	14	16	18
Running Creek	11	21	4	0	3	8	2
Whitecap Creek	8	7	2	1	4	4	1
Moose Creek	13	32	15	4	15	16	23
Subtotal	232	347	97	31	94	160	141
Lochsa Drainage							
Crooked Fork	32	60	22	31	49	39	80
Brushy Fork $^{\underline{1}/}$			6	4	13		15
Subtotal	32	60	28	35	62		95
South Fork Drainage 1/							
Newsome Creek			3	6	5		26
Crooked River			5	33	13		71
Red River			12	20	15		62
Subtotal	==	==	<u>20</u>	<u>59</u>	<u>33</u>	==	<u>159</u>
Total	264	407	145	125	189		395

 $<sup>^{\</sup>underline{1}/}$  Counting began in 1974.

Table 3. Length frequency distribution for spring chinook kelts, 1977.

Fork	Bear V	alley					Big Cr	eek
length	Cre	ek	Elk C	reek	Sulphur	Creek	(Uppe	
(in)	Female	Male	Female	Male	Female	Male	Female	Male
22				1				
23								
Subtotal	0	0	0	1	0	0	0	0
24		2						
25		6		2				
26	2	5		5				1
27	3	19		7				
28	1	17	1	13		1		3
29	3	11	1	9		1		
30	6	13	2	9				1
31	<u>2</u>	<u>5</u>		<u>9</u>				<u>1</u>
Subtotal	17	78	4	54	0	2	0	6
32	1	1	1	1				
33	1		2	2				
34	3	2	2					
35	2	1					1	
36	4		2					
37	3		3					
38		2	2					
39		2						
40								
41		<u>1</u>						
Subtotal	14	9	12	3	0	0	1	0
Grand total	31	87	16	58	0	2	1	6

Table 3 (Cont'd.). Length frequency distribution for spring chinook kelts, \$1977.\$

Fork length	Lemhi R	Pivor	Marsh ( Draina		Upper S River		Upper Ea	
(in)	Female	Male	Female	Male	Female	ма1е	Female	Male
(111)	1 Cilia i C	Матс	i cilia i c	Marc	T Cilia TC	Marc	1 Cilia i C	Marc
18						1		
19						1		
20					1	5		
21		1				11		
22		1				13		
23					<u>3</u>	<u>39</u>		
Subtotal	0	2	0	0	4	70	0	2
24					2	40		
25			2	1	4	39		
26			1	2	8	46	2	
27	1		3	1	8	56		
28	1	1		3	4	55		
29		4	2	1	7	36	1	
30	1			1	15	37	1	2
31					<u>11</u>	<u>14</u>	<u>1</u>	
Subtotal	3	5	8	9	59	323	5	2
32			1	1	15	16	2	
33					18	5	2	3 2
34	4				27	6	4	2
35			1		22	3	5	
36	1		2 2		42	11	9	
37		1	2		32	11	9	3
38					13	4	11	3
39					6	11	3	3 3 3 4
40					3 2	12	1	
41				1	2	15		2
						7	1	2 2
43						5		2
44								
45								<u>1</u>
Subtotal	5	1	6	2	180	107	47	25
Grand total	8	8	14	11	243	500	52	29

Table 4. Length frequency distribution for summer chinook kelts, 1977.

Fork			Lake Cre		South F	
length	Johnson	Creek	Secesh	River	Salmon	River
(in)	Female	Male	Female	Male	Female	Male
18		1				2
19		1 1				3
20		1				1
21		_				4
22		1				2
23		_				2
24		3				3
Subtotal	0	7	0	0	0	13
25		10				14
26		11		1	1	23
27		45		4	2	38
28		43		4	7	40
29	2	46		8	10	70
30	1	32		11	14	47
31	2	22	1	5	7	35
32	3	13	1		5	11
33		2		2	3	8
Subtotal	8	224	2	35	49	286
34		2			2	4
35		1			1	2
36	2	1			2	3
37	1				1	
38		3			1	
39		1				2
Subtotal	3	8	0	0	7	11
Grand total	11	239	2	35	56	310

Table 5. Percent age composition, by sex, of spring chinook kelts, 1977.

Stream and age group	Females	Males	Males and Female
emhi River			
Age group 3 <sub>2</sub>		25	12.5
Age group $4_2$	37.5	62.5	50
Age group 5,	62.5	12.5	37.5
	100.0 (n=8)	100.0 (n=8)	100.0 (n=16)
arsh Creek Drainage			
Age group 3 <sub>2</sub>			
Age group $4_2$	57	82	68
Age group 52	43	18	32
	100 (n=14)	100 (n=11)	100 (n=25)
oper Salmon River			
Age group 3 <sub>2</sub>	2	14	10
Age group $4_2$	24	65	51
Age group 5,	74	21	39
	100 (n=243)	10 (n=500)	100 (n=743)
pper East Fork			
Age group 3 <sub>2</sub>		6	2
Age group $4_2$	10	13	11
Age group 5 <sub>2</sub>	90	81	87
	100 (n=52)	100 (n=52)	100 (n=83)

Table 5 (Cont'd.). Percent age composition, by sex, of spring chinook kelts, 1977.

Stream and age group	Females	Males	Males and
Bear Valley Creek			
Age group 3 <sub>2</sub>	0	0	0
Age group ${\bf 4_2}$	55	90	81
Age group 52	45	10	19
	100 (n=31)	100 (n=87)	100 (n=118)
Elk Creek			
Age group 3 <sub>2</sub>	0	1	1
Age group 42	25	95	81
Age group 5 <sub>2</sub>	75	4	18
	100 (n=16)	100 (n <sup>=</sup> 61)	100 (n=77)
Sulphur Creek			
Age group 3 <sub>2</sub>	0	0	0
Age group $4_2$	0	100	100
Age group 52	0	0	0
	0 (n=0)	100 (n=2)	100 (n=2)
Big Creek (Upper)			
Age group 3 <sub>2</sub>	0	0	0
Age group $4_2$	0	100	83
Age group 52	100	0	17
	100 (n=1)	100 (n=6)	100 (n=7)

Table 6. Percent age composition, by sex, of summer chinook kelts, 1977.

Stream and age group	Female	Males	Males and
beream and age group	1 Cilia 1 C	PIGTED	
Johnson Creek			
Age group $3_2$	0	1	1
Age group 42	73	93	92
Age group $5_2$	27	6	<u>7</u>
	100 (n=1)	100 (n=246)	100 (n=257
ake Creek and Secesh River			
Age group $3_2$	0	0	0
Age group $4_2$	100	100	100
Age group 5 <sub>2</sub>	0	0	0
	100 (n=2)	100 (n=35)	100 (n=37)
South Fork Salmon River			
Age group 32	0	4	4
Age group 42	88	92	91
Age group $5_2$	12	4	_ <u>5</u>
	100 (n=56)	100 (n=310)	100 (n=366

APPENDIX

### LEGEND

**Ground Survey Sections** Aerial Survey Sections Ground Redd Counts Aerial Redd Counts Aerial-Ground Check Areas Aerial-Ground Check Area Count Migratory Block Road Trail Forest Service Stations Landing Strip XXXXX Fence Pack Bridge Highway Bridge

STREAM Salmon River MAP SCALE 1/4" = 1 mile Reingold, Jeppson Ball, Moore, McCabe, Swan  TIMING: Early On Time Late (mark one)  REMARKS:  Yankee Fork  Sunbeam  Valley Cr.  Upper Stanley  24 Sunny Gulch Summers Sheep Bridge Springs  Redfish Lake  Bridge Sawtooth R.S.
OBSERVATION CONDITIONS Overcast OBSERVER Ball, Moore, McCabe, Swan  TIMING: Early On Time Late (mark one)  REMARKS:  Yankee Fork  Sunbeam  Upper Stanley  Sunny Gulch Summers Sheep Bridge Springs  Redfish Lake
Valley Cr.  Upper Stanley 24 Sunny Gulch Summers Springs  Redfish Lake
Valley Cr.  Upper 24 Sunny Gulch Summers Springs  Redfish Lake
Hell Roaring Creek  Pettit Lake  Count lower bridge to mouth  Reckenridge Diversi Dam  Pole Creek  Alturas Lake Creek  Beaver

DRAINAGE Salmon River	SURVEY DATE September 1
STREAMSalmon River	MAP SCALE 1/6" = 1 mile
OBSERVATION CONDITIONS Good	OBSERVER Ball
TIMING: Early On Time Late	(mark one)
REMARKS: On September 1, 3 redds we	re counted
on Indian Riffle; by September 7	x /•
the number had increased to 54. $_{ m E}$	llis
	Pahsimeroi River
-(3)-;/	<b>J</b> i.
į,	Salmon River
Challis <b>D</b>	
	Bridge
*	<b>1</b>
3	· <b>'</b> ,
\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	N
Yankee Fork	
(18)	200
(32)	<b>E</b> ast Fork
Sunbeam	Salmon River
Warm Creek	لنعتنين
Springs Creek	
' /	

DRAINAGE Salmon River	SURVEY DATE September 1. 1977
STREAM Salmon River	MAP SCALE 1/4" = 1 mile
OBSERVATION CONDITIONS Good	OBSERVER Ball
TIMING: Early On Time Late	(mark one)
REMARKS:	
Salmon River	
Ellis Pahsimeroi River	

DRAINAGE Salmon River	SURVEY DATE August 22 & 31, 1977
STREAM Valley Creek	MAP SCALE 2/3" = 1 mile
OBSERVATION CONDITIONS Fair	OBSERVER McCabe, Manis, Ruehle, Moore
TIMING: Early On Time Late	(mark one)
REMARKS: <u>Early for summers;</u>	
on time for springs	Trap To Lowman
	Creek Valley Cr.
	( Valley ) U
Elk Creek	Cr. Line
Stanley	Bridge
Lake Cr.	
Stanley Lake	
	(18)
	Stanley Creek
Springs	كنيز
Summers	~
<b>ک</b> ر.	
· · · · · · · · · · · · · · · · · · ·	
Iron	
Creek 63	
Stanley <b>Stanley</b>	·
Salmon R.	
Salmon K.	
انف	To Challis
To Ketchum	

DRAINAGE Salmon River SURVEY DATE August 17, 1977 1/3" = 1 mile STREAM Yankee Fork MAP SCALE Good OBSERVER Ball, Reingold, Moore OBSERVATION CONDITIONS On Time TIMING: Early Late (mark one) Survey started at campground about 3 miles up. REMARKS: Upper river blocked by log jam. Mackay Creek Ten Mile Cr. Nine Mile Cr. Eight Mile Cr. --see remarks Six Mile Cr. Jordan Creek Five Mile Cr. Lightning Creek 37 Ramey Cr. W. Fk. Yankee Fk. Deadwood . Creek Pole Flat Forest Camp To Challis Sunbeam To Stanley 17

DRAINAGE	Salmon River	SURVEY DATE _A	Nugust 24 & Sept 2, 1977
STREAM	East Fork	MAP SCALE 1/6	6" = 1 mile
OBSERVATI	ON CONDITIONS Fair	OBSERVER Ball,	<u>Williams, Manis, M</u> oore, Ruehle
TIMING:	Early On Time	Late (mark one)	
REMARKS:_			_
			_
-			_
	<b>}</b> :		
	<b>\</b> }		
Salmo	n River		
		•	
	17-(28	<b>)</b>	
	<b>/</b> ;		
	Jimmy Smith	•	
Lake Creek		Herd Creek	
	(108)		
Boulder	3.5 miles		
Creek	Boulder Cr	Ranch	
Little /		X	
Boulder Creek	168	(spring/summer	boundary is
Germania		3.5 miles belo	ow Boulder Cr.)
Creek			
	AJ.	$\bigwedge$	
Bowery G.S.		/   . \	
J			
	<b>.</b>		
·		K l	
		$\mathcal{N}$	

SURVEY DATE September 6, 7, & 9, 1977 DRAINAGE Salmon River MAP SCALE 1/6" = 1 mileSTREAM Lemhi River Moore OBSERVATION CONDITIONS Good OBSERVER Ball, Tetz, McCabe, Swan, Anderson Late (mark one) TIMING: Early On Time REMARKS: Maiers Lane to mouth counted as one section. Salmon City Lemhi River almon River Tendoy Basin Creek Lemhi Bear Valley Creek Hayden Creek Maiers Lane Lee Cottam Creek Lane Leadore

DRAINAGE Salmon River	SURVEY DATE August 29, 1977
STREAM North Fork	MAP SCALE 1/2" = 1 mile
OBSERVATION CONDITIONS Good	OBSERVER Ball, Moore
TIMING: Early On Time Late	(mark one)
To Montana	REMARKS:
Twin Creeks	
15)	Dahlonega Creek
	Gibbonsville
<b>**</b>	
North Fork	
Salmon River	
Hughes 16	
Creek	Sheep Creek
lin m	
Hull	Fork Ranger Station
Creek	
~~~;	
(i	
<b>\frac{1}{3}</b>	
<i>'</i>	
Wanth Book	
North Fork	
To Shoup To Salmon	0
TO Burner	20

DRAINAGE Salmon River	SURVEY DATE September 1, 1977
STREAM M. F. Salmon River	MAP SCALE 1/4" = 1 mile
OBSERVATION CONDITIONS Good	OBSERVER Ball
TIMING: Early On Time Late	(mark one)
	REMARKS:
Indian Creek	
	70
Pistol	
Pistol	7
المراسم	
	Middle Fork Salmon River
\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	
North Fork	
\ <u></u>	
Sulphur T	
7-(1)-	
}	
·	
Bear Valley Creek	
Marsh Creek	•
Piarsii Creek	
Lolo Creek	•

DRAINAGE Salmon River	SURVEY DATE September 1, 1977
STREAM M. F. Salmon River	MAP SCALE 1/4" = 1 mile
OBSERVATION CONDITIONS Good	OBSERVER Ball
TIMING: Early On Time Lake	(mark one)
REMARKS:	
Big Creek	
	Middle Fork Salmon River
	<del>(0)</del> -
Brus	sh f
	Creek
	<b>)</b>
	<b>\</b>
,	
	· <b>\</b>
	Camas Creek
ممهر	
كمرير	
Indian	
Creek	
/ '/-	22

DRAINAGE Middle Fork Salmon River	SURVEY DATE September 7, 1977
STREAM Loon Creek	MAP SCALE $1/3$ " = 1 mile
OBSERVATION CONDITIONS Good	OBSERVER Ball, Moore
TIMING: Early On Time Late	(mark one)
	RKS:
Steep Canyon  Middle Fk. Salmon R.  Cabin Cr.  Ro  Cold Springs Creek  Indian Creek	ock Cr. Warm Springs Cr. Cottonwood Cr.
Grouse Cr.  Trail Cr.  Boyle Ran  Canyon Cr.  Loon Cree  Canyon	ch
23	

DRAINAGE M. F. Salmon River SURVEY DATE August 24 & 30, 1977

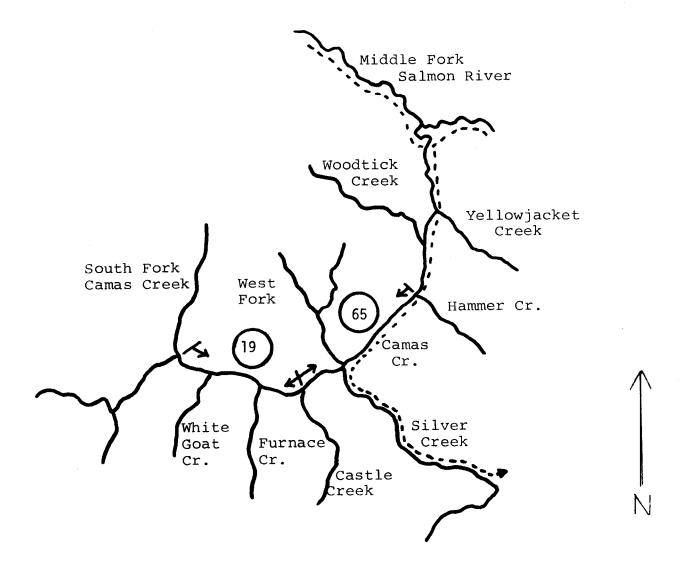
STREAM Camas Creek MAP SCALE 1/4" = 1 mile

OBSERVATION CONDITIONS Poor OBSERVER Ball, Kozacek, Moore

TIMING: Early On Time Late (mark one)

REMARKS: On 8-30-77 it was raining making

observation conditions poor



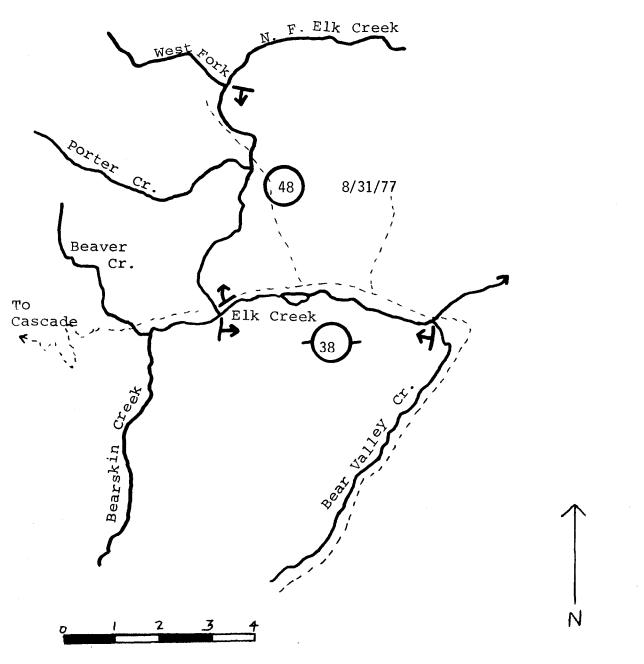
DRAINAGE M. F. Salmon River	SURVEY DATE 9/1/77
	MAP SCALE 1" = 2 miles
OBSERVATION CONDITIONS Excellent	
TIMING: XXXXX On Time IXXXX	
REMARKS: Observed a late movement of	it itsh into bear variey creek.
	Salmon River
	Salm
	raller Crass 4
	Va Steek
Elk Creek	
<b>~</b>	
ſ	Creek
To the second se	
/ //	되 다 또
$\binom{G}{64}$	
$\left(\begin{array}{c} -64 \end{array}\right) \left(\begin{array}{c} 0 \\ 7 \end{array}\right)$	
Sack Sack	
$\Psi$	
Asearo Creek CacheCreek CacheCreek	
	lack
<b>1</b> \$,   \$	
$\sqrt{2}$	N
	IV
0 1	2 3 4
Porter Bros. Dredges	
	5

DRAINAGE M. F. Salmon River	SURVEY DATE 9/1/77
STREAM Elk Creek	MAP SCALE1" = 2 miles
OBSERVATION CONDITIONS good	OBSERVER Welsh

TIMING: XXXXXX On time XXXXXX (mark one)

REMARKS: Numerous beaver dams completely blocked the channel on upper Elk

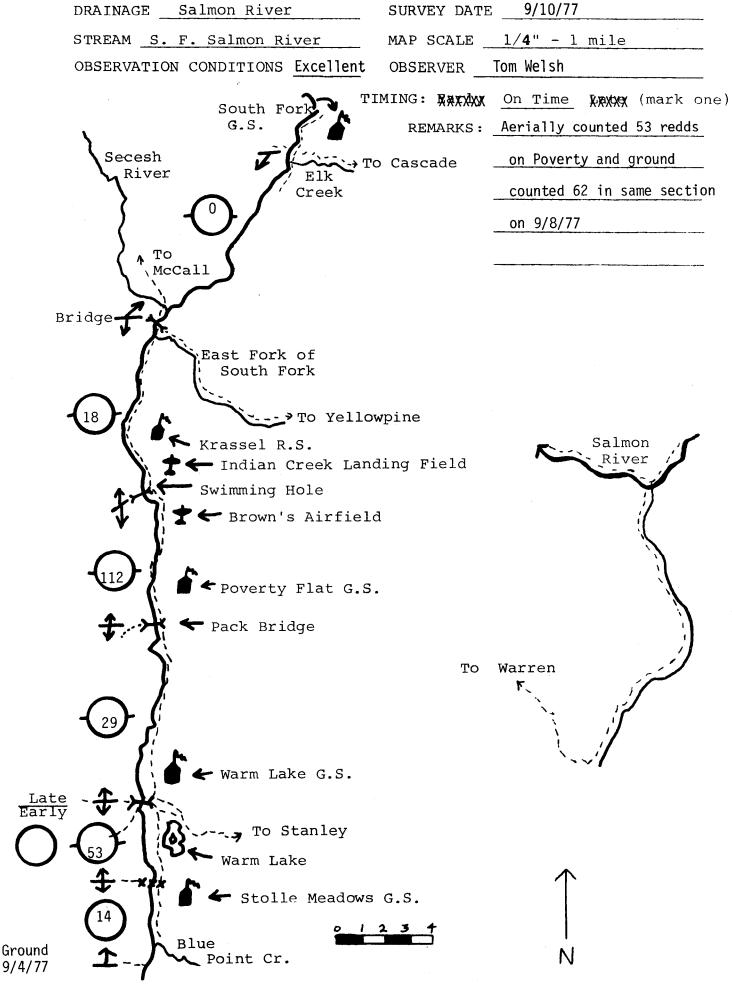
Creek but early arriving salmon were successful in ascending the dams. Low flows allowed the beaver to construct dams across the main channel.



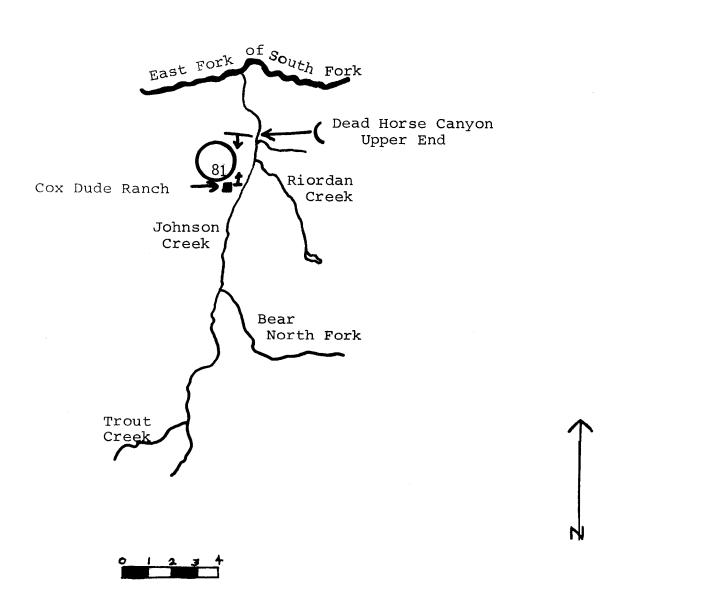
DRAINAGE M. F. Salmon River Marsh, Beaver, Knapp, STREAM Capehorn Creeks	SURVEY DATE August 16 and 18, 1977  MAP SCALE 2/3" - 1 mile
OBSERVATION CONDITIONS Good	OBSERVER Ball, Reingold, Moore, Ruehle, Manis
TIMING: Early On Time Late	(mark one)
REMARKS:	
	Middle Fork Salmon River
Bear Valley	
Creek	
M=	arsh >
	reek
Ÿc //	
$\mathcal{C}_{a_{D_{e}h_{Or_{n}}}}$ Creek	➡ Bridge
Banner	
Creek 24	
<i>[:</i>	
Beave	Creek Bear Creek
(Airport to	
Capehorn Cr.)	
A	Winnemucca To Beaver Ponds Creek
	Cleev
	Knapp
1.	Creek
Capehorn Airport	

DRAINAGE M. F. Salmon River SURVEY DATE 8/18/77 STREAM Sulphur Creek MAP SCALE 1/6" = 1 mile OBSERVATION CONDITIONS good OBSERVER Welsh Date (mark one) TIMING: <u>k</u>&XXXX On Time REMARKS: Flew Sulphur Creek on 9/1/77 and saw no beaver dams across the channel below the trend area. North Fork Upper Bluemoon Ranch Creek Boundary (Trend count area is from the upper ranch downstream approximately 3 stream miles to the point where the stream meanders over to the hillside on the north edge of the meadow.)

DRAINAGE M. F. S	Salmon River	SURVEY	DATE 9/1/77
STREAM Big Cree	ek	MAP SC	ALE <u>l" = 4 miles</u>
OBSERVATION COND	TIONS Good	OBSERV	ER Welsh
TIMING: EXXXX	On Time XXXXX	(mark o	ne)
	) RE	MARKS: _	Flew lower Big Creek for first time
{	Logan		since 1970. Counted 8 redds at Cove
(Upper) 8/15/77	Creek	Smith Creek	Creek and only 2 redds at Taylor Ranch. A large (4 foot high) beaver dam completely blocked the channel at the midpoint and the upper section but early arriving salmon were successful in ascending the dam. No dams were seen during the aerial flight of lower Big Creek. The upper 500 yards of the upper section were completely dry due to low stream flows.
Monumenta. Creek			oked eek
(Lower) Rus Cr	Salmon River	k	
	2	29	



DRAINAGE	E. F.	of South	Fork	SURVE	EY DAT	E 9/10/77	 
STREAM	Johnson	Creek	· · · · · · · · · · · · · · · · · · ·	MAP S	SCALE _	1" = 4 miles	_
OBSERVA <del>TI</del>	ON COND	ITIONSG	<del>ood</del>	OBSEF	RVER _	Welsh	_
TIMING:	XXKXXX	On Time	#X#X#X	(mark	one)		
REMARKS:							
	-		· · · · · · · · · · · · · · · · · · ·				



DRAINAGE S. F. Salmon River SURVEY DATE STREAM Secesh and Lake Creek MAP SCALE 1" = 4 miles Welsh OBSERVATION CONDITIONS good OBSERVER TIMING: Early On Time Late (mark one) Counted 25 redds from upper bridge to Long Gulch Bridge and 13**REMARKS:** redds from Long Gulch Bridge to church camp ground at end of Total Secesh Meadows count was 38 redds. The road. Lake Creek summer chinock spawned earlier in 1977 than I have ever observed. Willow Creek Warm 8/16/77 Spring Creek Summit Creek 9/4/77 Campground-end of road Loon Lake Blue Loon Lake Creek Creek Creek Lick Creel outh Fork Salmon

	DRAINAGE	Clearwa	ater River		SURVEY	DATE	Ground - 9/14/77 Aerial - 9/7/77
	STREAM		River & tri				
	OBSERVATION				OBSERV		Hoss
	TIMING:	Early	On Time	Late	(mark on	e)	
			¥,	1		Cap Cree	ek
	•		ay River [		Guard Star	cion	
Little	Clearwater Riv	Jer Jer	Sellina,	<b>)</b> ;	Crossing		
-			· \$	Magruder	R.S.		
			Thompson F1	at <b>4</b>		÷	
		•	Swet Cre	ek /			

DRAIN	AGE	Clearwa	ter River		SURVEY I	ATE	Aerial	- 9/7/77
STREA	M Sel	way Riv	er & tribut	aries	MAP SCAI	LE	½" = ]	mile
OBSER	VATION	CONDIT	CIONS GOO	od	OBSERVE	₹	Hoss	
TIMIN	G: Ea	arly	On Time	Late	(mark	one)		
REMAR	KS: _							
•								
				For				
Sel	way Rive	er		North Fork			Elbons R	endex
			1	<u> </u>	Moose Cr	eek	Elpoy	; C <sup>2</sup>
			Mo	oose Cr	23		4	
				R.S.				
<b>;</b>			1					
							<b>'</b>	
			Beal	Creek				
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6	oat Cree	k	}		`	$C_{Ub}$	Creek	
	;			<b>,</b>		Ì	reek	
			$\searrow$ $^{\circ}$	<b>)</b>				
			1					
		(2)	**					
	creek							
Running	5 62		$\binom{6}{6}$					
		( to 100 )	17					
		186 Creek	12		nite Cap C			rs Flat
	k	7			Paradise G	uard St	ation	

•	DRAINAGE	S. Fork	Clearwater F	١.	SURVEY DATE	Ground Aerial	- 9/2/77 - 9/6/77
	STREAM	As noted			MAP SCALE	½" = 1	mile
	OBSERVATION		Cood		OBSERVER	Hoss	
	TIMING:	Early	On Time	Late	(mark one)		
	REMARKS:			<del></del>			-
							-
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	Townsite Cf	eet		];	LIK GIL)		
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	9 Nugget	reek		1	Red River	٧٠.	12 Red River R.S.
	2 17				Red River	5	9
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	~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~	River	Crooked	River			•
	, mate	<b>,</b> .		el			,
	FOR CLESTRATE				1	ئے۔ '	
	FOTE				<b>)</b>	Rel	lief Creek
					(	21)	(50) (**

DRAINAGE	Lochsa Rive	er	SURVEY DATE	Ground - 8/29/ Aerial - 9/1/7	77 7
STREAM _	As noted		MAP SCALE		
OBSERVATI	ON CONDITIONS	Good	OBSERVER _	Hoss	
TIMING:	Early On Tim	<u>e</u> Late (1	mark one)		
REMARKS:				·	
				· · · · · · · · · · · · · · · · · · ·	
		· · · · · · · · · · · · · · · · · ·			
Fox Creek			$C_{reek}$	/	
	1		4	/	
		-(15)-	Haskel	,'	)
		Crooked For		/ Downston	7
	\frac{\zeta}{\pi}		# 51 <b>%</b>	Brushy	Fork
	Shorten			-(1	₅) <b>-</b> ''
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		المستشتزا	Powell R	i.s. ( %	Creet
	الأنب			'	St.
	Lochsa River			1	
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Submitted by:

Thomas L. Welsh, Regional Fishery Biologist Steven A. Hoss, Regional Fishery Biologist Kent W. Ball, Regional Fishery Biologist

Approved by:

IDAHO DEPARTMENT OF FISH AND GAME

Stacy Gebhards, Chief Bureau of Fisheries

Jerry Mallet

Fishery Research Supervisor Bureau of Fisheries